A META-ANALYSIS OF THE EFFECTS OF SCOPE CONDITION-BASED PARTICIPANT EXCLUSION ON THE RELATIONSHIP BETWEEN STATUS AND INFLUENCE IN EXPECTATION STATES RESEARCH

A thesis submitted to Kent State University in partial fulfillment of the requirements for the degree of Master of Arts

by

Joseph C. Dippong

August, 2009
Thesis written by
Joseph C. Dippong
B.A., Hiram College, 2006
M.A., Kent State University, 2009

Approved by

_____________________________________, Advisor
Will Kalkhoff

_____________________________________, Chair, Department of Sociology
Richard T. Serpe

_____________________________________, Dean, College of Arts and Sciences
John R. D. Stalvey
# TABLE OF CONTENTS

LIST OF TABLES ........................................................................................................... iv

ACKNOWLEDGEMENTS .................................................................................................. v

I. INTRODUCTION ............................................................................................................. 1

II. BACKGROUND .............................................................................................................. 3

III. DATA AND METHODS ............................................................................................ 19

IV. RESULTS .................................................................................................................. 26

V. DISCUSSION ............................................................................................................... 30

VI. CONCLUSION .......................................................................................................... 35

VII. REFERENCES ......................................................................................................... 36

APPENDIX A ................................................................................................................ 44

APPENDIX B ................................................................................................................ 45
LIST OF TABLES

TABLE 1. Studies Included in Meta-Analysis..............................................25

TABLE 2. Effects of Scope Exclusions on $q$ and $m$......................................29
ACKNOWLEDGEMENTS

I would like to thank my thesis advisor, Dr. Will Kalkhoff for his guidance and direction throughout the process of completing this thesis. I would also like to thank Dr. Richard Serpe and Dr. Andre Christie-Mizell for serving on my thesis committee and for the valuable feedback they provided. In addition, I would like to thank Larry Hembroff, Rosemary Hopcroft, Barbara Ilardi, Toby Parcel, Dave Wagner, and Murray Webster for providing me with additional information on their studies, as well as Martha Foschi for her assistance in identifying studies for this analysis. Finally, I would like to thank my wife, Nicole, without whose patience and support I would not be able to pursue my academic and career ambitions.
CHAPTER I

INTRODUCTION

Scope statements have been an integral part of expectation states theory since its inception. Expectation states theory describes and explains the relationship between overt status characteristics and various behavioral outcomes—most commonly patterns of interpersonal influence—in small, ad hoc task groups. Collective orientation and task orientation are two scope conditions in expectation states theory. Many researchers include specific quantitative measures of these conditions in their studies and use these as a basis to exclude from analysis participants who give responses that fall short of a predefined threshold. Others employ more open-ended interview questions to assess whether or not a participant meets the scope conditions of expectation states theory. The practice of excluding individuals from analysis for violating scope conditions, however, is not universal. While many researchers report the measures of task orientation and collective orientation they employ, as well as the number of participants excluded on these grounds, much of the research published in this tradition makes no mention of how scope conditions are measured, or of any participants who fail to meet these important criteria.

The specification of collective orientation and task orientation as scope conditions implies that actors who are not collectively or task oriented cannot inform our understanding of the relationship between status and influence, or at least that expectation
states theory does not seek to explain the status-related behavior of actors who are not collectively and task oriented. It stands to reason that researchers who exclude participants based on scope criteria do so with the tacit expectation that this practice has a measurable effect on experimental outcomes, although none explicitly state what sort of effect they anticipate. To this end, two important questions regarding the practice of excluding non-task oriented and non-collectively oriented individuals have yet to be addressed. First, what specific outcomes should social psychologists anticipate when they exclude participants based on scope criteria? And second, do the data bear out these expectations?

The purpose of the present research is to attend to these questions. Specifically, I intend to articulate a clear theoretical basis for making scope-based exclusions, including a specific set of outcomes that researchers who engage in this practice can reasonably expect to observe. Further, my goal is to test whether these hypothesized effects translate into meaningful empirical effects. Through meta-analysis, I compare studies in which researchers have excluded participants for failing to satisfy scope conditions to those in which no scope-based exclusions are made. In doing so, I intend to demonstrate the need to develop a standardized approach to handling scope conditions. By standardizing the measurement and application of scope conditions, expectation states researchers can improve the comparability of studies, which is an important component in developing a cumulative body of social knowledge.
CHAPTER II

BACKGROUND

Expectation states theory explains the formation and behavioral effects of the hierarchies of power and prestige that arise in small, face-to-face task groups. One important determinant of an individual’s place within the power and prestige hierarchy of a group is his or her status characteristics (Berger et al 1972). Status characteristics are observable individual traits that encompass at least two states that are differentially valued, such that possessing the more highly valued state accords an individual greater social benefit (Berger et al 1977). A specific status characteristic is one that indicates a person’s capacity to perform a specific ability, whereas a diffuse status characteristic does not reflect any specific capacity, but is viewed as an indirect indicator of an individual’s general ability. For example, mathematical aptitude is a specific status characteristic, while race, gender, and educational attainment are diffuse status characteristics (Berger, Ridgeway, and Zelditch 2002).

Status characteristics affect group interactions through the formation of expectation states (Berger et al 1972; Berger et al 1977). Based on status characteristics, members of task-related groups (such as juries) form expectations for each other’s ability to contribute to the collective task (Strodtbeck, James, and Hawkins 1957; Moore 1968). A status characteristic becomes “activated” or salient if it differentiates between two or more members of a group, or if group members believe it is directly connected to the
instrumental skill required for the successful completion of the collective task (Berger, Rosenholtz, & Zelditch 1980). For example, in a group comprised of both men and women, gender is a salient diffuse status characteristic. Research on status characteristics has demonstrated that males possess the more highly valued state of gender, and as such, exercise greater influence in group tasks (Meeker and Weitzel-O’Neill 1977).¹

Using the graph-theoretic model employed in many branches of expectation states theory, Figure 1 illustrates how a single diffuse status characteristic operates in an interaction between two individuals. In Figure 1, the first individual (p) is differentiated from the other (o) according to one diffuse status characteristic (D). P’s possession of the more socially desirable state of the characteristic (D+) causes both p and o to form the generalized expectation state (Γ+) that p is more competent than o by inferring p’s possession of the instrumental skill (C*+) required to complete the collective task. As more status characteristics enter the model, pathways to a successful task outcome (T+) become increasingly numerous (see Berger and Fisek 1970; Zelditch, Lauderdale, and Stublarec 1980). Recent mathematical advancements facilitate analysis of complex status situations (Whitmeyer 2003).

The general behavioral outcome associated with status differentiation in groups is that individuals anticipate which members of the group will offer more valuable input regarding the task at hand, which in turn leads to differential participation among group members in terms of action opportunities, performance outputs, reward actions, and

¹ See Kalkhoff, Younts, and Troyer (2008) for a recent test and review of the evidence on gender as a status characteristic.
influence (Berger et al 1972). As a consequence, high-status group members exert
greater influence, and low-status members exert less.

\[
\begin{array}{ccccccc}
p & + & D(+) & + & \Gamma(+) & + & C^{*}(+) & + & T(+) \\
o & + & D(-) & + & \Gamma(-) & + & C^{*}(-) & + & T(-) \\
\end{array}
\]

**Fig 1.** Graph of an interaction between individuals differentiated according to a single
diffuse status characteristic (D)

**The Standardized Experimental Setting**

As stated above, the effects of status are frequently measured in terms of patterns
of interpersonal influence. Berger and colleagues (1977) prescribe a specific protocol—
termed the Standardized Experimental Setting, or SES—for manipulating status and
measuring its effects. In the SES, researchers can manipulate status using any number of
specific and diffuse status characteristics, and status differences are achieved by
controlling and manipulating the information that participants receive about each other.
Because participants never see each other face-to-face, this differentiation is easily
accomplished by conveying fabricated demographic information, such as age or
educational attainment.²

Once the experimenter has manipulated the relevant status characteristic(s),
participants, along with their ostensive partners, complete an experimental task, which
takes on the form of an ambiguous, binary choice decision-making test, such as “contrast

² In practice, most research participants never interact with a true “partner,” but usually
with an artificial, computer-emulated partner.
sensitivity” or “meaning insight.” For example, in the contrast sensitivity task, the experimenter shows the participants a pair of (usually) black and white boxes, and asks them to determine which of the two contains more white area (Moore 1968). In truth, both contain a nearly equal amount of white space. Participants record an initial decision, and are then informed of their partner’s decision. After hearing their partner’s decision, participants are given the option to change their initial choice. This is repeated over several trials (typically 25), and responses are manipulated so that a set number of critical trials (typically 20) generate disagreement between the participant’s initial choice and the partner’s initial choice. Openness to influence is measured as the probability of a “stay” response, denoted P(S), which signifies the probability an individual will reject influence attempts from another.

P(S) is estimated using the proportion of stay responses, or the ratio between stay responses and critical trials. Berger and colleagues (1977) describe P(S) with the linear equation:

\[ P(S) = m + q(e_p - e_s) \]  

(1)

where \( m \) and \( q \) represent empirical constants estimated from data, and \( (e_p - e_s) \) represents an actor’s expectation advantage (described below). The \( m \) parameter is theorized as the P(S) for status equals, which can also be considered the “baseline tendency” to reject influence (Berger et al 1977; Kalkhoff and Thye 2006). The \( q \) parameter, then, contains the situational factors, such as experimental manipulations that affect P(S) (Fox and Moore 1979). In essence, \( q \) represents the
magnitude of the relationship between status and influence. The larger the value of $q$, the further $P(S)$ will deviate from $m$ (Berger et al 1977).

In the SES, status differences are most commonly operationalized in terms of expectation advantage. Each member of a task group has a specific expectation value in relation to each other member. Expectation value is stated as a numerical coefficient ranging from -1 to +1, and is derived from the graph-theoretical model. An individual’s expectation value is a function of the number of salient status characteristics operating in the interaction, as well as the number and lengths of paths to task outcomes. For example, in the status situation diagrammed in Figure 1, a single status characteristic differentiates the actors. As can be seen in Figure 1, $p$ is connected to task outcome by two positive paths—one of length four, and of length five (see Berger et al 1977 for detailed instructions on path counting).

In order to calculate $p$’s relative expectation advantage, we must first calculate $p$’s expectation value. This can be calculated following the formula provided by Berger and colleagues (1977):

$$e_s = e_s^+ + e_s^-$$  \hspace{1cm} (2)

where

$$e_s^+ = [1 - (1 - f(i)) \cdots (1 - f(n))]$$  \hspace{1cm} (3)

and

$$e_s^- = -[1 - (1 - f(i)) \cdots (1 - f(n))].$$  \hspace{1cm} (4)
Equation 2 embodies the assumption of aggregated expectation states (Berger et al 1977), which states that p’s aggregated expectation value \( e_x \) is produced by combining all relevant positive and negative status information, or specifically, p’s positive expectation value \( e^+ \) plus his or her negative expectation value \( e^- \). Equation 3 states that p’s positive expectation value is a function of the number and lengths of positive paths to the task outcome, where \( i \) represents a path of length \( i \), and \( f \) represents the strength of that path. Similarly, Equation 4 states that negative expectation value is a negative function of the number and lengths of negative paths to the task outcome. In the status situation diagrammed in Figure 1, p’s aggregate expectation value is .1927 (see Appendix for calculations). And because performance expectations are symmetrical, o’s expectation value is -.1927.\(^3\)

Expectation advantage refers to p’s expectation standing relative to o, and is denoted as:

\[
e_x = e_p - e_o
\]

This states that expectation advantage is obtained by subtracting o’s aggregate expectation value from p’s expectation value. In our example, this yields .1927 – (-.1927) = .3854.

\(^3\) Balkwell has created an online expectation advantage calculator, available on his website, which facilitates easy calculation of these terms: http://www.geocities.com/jwbalkwell/expect.html
Scope Conditions

Walker and Cohen (1985) suggest that because sociologists lack any explicit standard by which theories can be falsified or rejected, sociological research has largely failed to achieve the cumulative nature that characterizes the natural sciences. This is because all social “laws” are simultaneously both true and false—an exception can be found for almost every rule (Walker and Cohen 1985; Harris & Walker 1992). To address the paradox inherent in social laws, some social psychologists have begun implementing scope conditions in their research programs. Specifying scope conditions, in essence, allows researchers to generate specific, testable hypotheses, while simultaneously identifying what constitutes an exception to the theory being tested.

According to Foschi (1997), scope conditions “specify circumstances under which the relationship expressed in a hypothesis is expected to hold true” (p. 537). As a theory is supported under restricted conditions, the restrictions can be slowly relaxed, thereby expanding the scope of the theory (Walker & Cohen 1985; Foschi 1997). The process of relaxing scope conditions yields progressively broader theoretical formulations that apply to a greater number of social situations (Shelly 2002). In addition, tests of a scope-restricted theory that fail to meet the specified conditions can neither support nor falsify that theory.

Cohen (1989) lists five scope conditions that apply to expectation states theory: 1) Actors are participating in a valued task (T); 2) Associated with T is a specific skill (C); 3) Actors are task oriented; 4) Actors are collectively oriented; and, 5) Actors are socially differentiated only by the status characteristic(s) under observation. To the extent that
they are characteristics of either the experimental task or research setting, three of these five conditions (valued task, specific skill, and basis of differentiation) can be satisfied through careful study design. However, task and collective orientation, because they refer to dispositions of the actors themselves, cannot be similarly managed. While the SES is designed to maximize the likelihood that participants will meet these conditions, in order to account for the idiosyncratic nature of task and collective orientation, many expectation states researchers employ specific measures of these two conditions to verify that they have been met.

Task orientation. According to Webster and Sobieszek (1974), task orientation is predicated on the belief that the group’s task has a definite “correct” outcome. To this end, they refer to the task oriented group as having “extrasystemic” standards—that the correct answer is objective, such as a math problem with only one correct solution. Although the tasks utilized in expectation states research have no correct answers, it is only necessary that actors believe the task has a single correct outcome. Belief in the possibility of reaching a correct answer, however, is not sufficient for task orientation; an actor must also be sufficiently motivated to arrive at that correct answer.

The importance of task orientation to expectation states theory is rather straightforward. Strodtbeck, James, and Hawkins (1957) hypothesized that the very presence of status differences in task groups exists because task situations “re-create…the need for the differential experiences associated with status” (p. 714). Ridgeway (1981:336) further articulates the relationship between task orientation and status characteristics, stating that “the primary basis for status and influence is contribution to
the group’s task activity.” Researchers have also noted that a task-based group structure provides a basis by which initial status advantages can be legitimated (Shelly and Troyer 2001). If task orientation refers to the desire to complete the group task successfully, and the contributions of high status individuals are considered more valuable to the task, then increasing task orientation should lead to a greater willingness to accept influence among low-status individuals and a decreased willingness to accept influence among high status individuals (Troyer 2001).

**Collective orientation.** Collective orientation refers to a condition in which group members believe that in forming an opinion, it is “both legitimate and necessary to take others’ behavior into account” (Berger et al. 1972:243). Group members must believe that successful task outcome is not determined by chance, and that collective decision making maximizes the chances of obtaining the correct answer—that is, that the group will fare better than the individual. Actors must believe that the task can only be solved by “group action and consensus” (Webster and Sobieszek 1974:43).

Researchers have given much attention to the role that collective orientation plays in the status-influence process. Moore (1968) asserts unequivocally that without collective orientation, the entire status process is undetectable, stating, “person-orientation…destroy[s] the assumed one-to-one relationship between the evaluation of an act and the observable response” (Moore 1968:50). In essence, a non-collectively oriented person may make a decision based on any number of idiosyncratic reasons, while collective orientation increases the chances that decisions are based on relative expectations for competence (Foschi 2008). Troyer (2001) claims that increasing levels
of collective orientation should lead to an increase in $P(S)$ for high status participants and a decrease in $P(S)$ for low status individuals. This is because collective orientation makes “the partner and the partner’s potential contribution to the task more salient” (Troyer 2001:192).

**Scope-Based Participant Exclusion**

Webster and Sobieszek (1974) directly prescribe that “[researchers] must exclude from analysis data from subjects who do not meet one or more of the fixed initial conditions of the theory” (p. 178). Among these fixed initial conditions are the scope conditions of task orientation and collective orientation described above. The prescription to exclude individuals requires that researchers assess whether or not scope conditions have been satisfied. The post-experiment questionnaire is a typical method for measuring the presence of task orientation and collective orientation. (Foschi 2008).

Among published research in expectation states theory, however, great variability exists in the practice of implementing scope conditions. As important as scope conditions are (see Berger 2007), published research evidences at least two types of protocol variation concerning scope conditions. First, some researchers exclude participants for scope violations while others do not. Second, among those who do exclude participants, variability exists with regard to operationalization of key concepts, as well as the quantitative criteria used to determine the satisfaction of scope conditions. While Foschi (2008) addresses the latter point, my research focuses on the former.

To illustrate differences in the literature regarding the practice of excluding participants based on scope conditions, let us consider four separate published studies. In
their research on status effects related to gender, Foddy and Smithson (1999) report excluding 30 participants out of an initial pool of 242, or just over 12 percent. The reasons provided for these exclusions include violation of scope conditions as well as participant suspicion of experimental procedures. Likewise, Whitmeyer, Webster, and Rashotte (2004) exclude from their analysis 19 out of an initial pool of 76 participants (25 percent). Conversely, Bianchi (2004) reports excluding six participants, but for reasons unrelated to scope conditions, and Balkwell (1976) makes no mention of any participant exclusion. To the extent that excluding participants who fail to meet the theory’s scope criteria has an observable effect on a study’s outcome, protocol differences regarding this practice constitute an important between-studies variable, and the potential effects of these differences have yet to be fully examined.

**Analysis assumptions.** In order to make any meaningful comparison between studies that exclude participants based on scope conditions and those that do not, it is first necessary to articulate three inter-related assumptions that will guide my analysis. The first and most obvious of these assumptions is that task orientation and collective orientation are not simple dichotomies, but can be observed in varying degrees across participants and across studies (Foschi 2008), and that there is a threshold at which a participant can be safely considered to have met these criteria.

Two further assumptions pertain directly to examining whether or not any difference exists between studies with scope-based exclusions and those without them. First, we must assume that all studies are equally likely to include non-collectively oriented and non-task oriented individuals among their participants. Further, given that
the general aim of excluding participants is to increase the likelihood of satisfying a theory’s scope conditions, it follows logically that studies in which researchers exclude participants for failure to meet scope conditions contain fewer non-collectively oriented and non-task oriented participants than those that do not make such exclusions. Together these three assumptions simply assert that, ceteris paribus, overall levels of task and collective orientation will differ across studies based on whether or not they exclude participants for failure to meet scope conditions.

Consequences of scope-based exclusion. Recall that the \( m \) parameter of the linear expectation states equation (eq. 1) represents the tendency to reject influence among status equals, while \( q \) encompasses the situational effects of status on levels of influence. As such, \( m \) serves as a baseline level of influence rejection, and \( q \) denotes the strength of the relationship between status and influence, as well as context-specific effects (Fox and Moore 1979). Context-specific effects are those related to manipulations of a study’s independent variable (Berger et al 1977). Troyer (2001) posits that both task orientation and collective orientation impact a study’s observed \( P(S) \) values. Because expectation advantage is not vulnerable to situation-specific effects, task orientation and collective orientation can affect \( P(S) \) only through the \( m \) and \( q \) parameters.

Effects on \( q \). Troyer (2002:142) states that “In the absence of [collective] orientation, the sense of the other as a point of reference may be reduced, resulting in a more randomized pattern of response, and hence \( P(s) \) values that regress toward \( .50 \) for both higher- and lower-status actors.” Stated differently, lack of collective orientation reduces the strength of the status-influence relationship to a point at which rejection of
influence appears to occur at random and without regard to status differences or any other relevant variables. In order to observe any status effects at all, a minimal level of collective orientation must be present. It stands to reason that increasing levels of collective orientation should correspond to increased values for $q$.

Task orientation appears to operate in a similar fashion. Troyer (2002) states that “Task orientation should lead actors to pay closer attention to any information they receive…This suggests that task orientation might increase the impact of status differentiating information, leading to a larger impact of status on influence” (p. 142). Again, because increasing task orientation increases the strength of the status-influence relationship, we would expect this to be evidenced through a higher value for $q$, which is consistent with Berger and colleagues’ (1980) assertion that increasing collective and task orientation increases the strength of the relationship between status and behavior, which leads to my first hypothesis:

**Hypothesis 1**: Compared to studies that make no scope-based exclusions, studies that exclude participants for failure to demonstrate task or collective orientation will exhibit a stronger relationship between status and openness to influence, as evidenced in higher values for $q$.

*Effects on $m$.* Collective orientation may also impact $P(S)$ through the $m$ parameter. If actors are not collectively oriented, we would expect to obtain unusually high $m$ values. This, of course, is because actors are attempting to complete the task, but without considering the input of any partner(s). To this end, Webster and Sobieszek

---

4 In fact, each population has a specific baseline tendency to reject influence, so that when $q = 0$, $P(S) = m$, plus some amount of random error.
claim that non-collectively oriented actors “frequently rationalize their behavior with some version of the statements ‘I like to make my own decision’ or ‘I don’t like to let people influence me.’” Such individuals are unlikely to yield to their partner’s input, regardless of relevant status information, and thus have an inflated baseline propensity to reject influence. If collective orientation is the starting point for influence, it stands to reason that increasing collective orientation decreases the baseline tendency to reject influence.

In addition, the $m$ parameter may be affected by a participant’s level of task orientation, though the direction of this relationship is less clear. Existing expectation states literature suggests that increasing task orientation strengthens the relationship between status and influence, but it provides no indication of how task orientation (or lack thereof) affects an interaction between status equals. In psychological research on influence, the concept of “involvement” (cf. Zimbardo 1960; Eagly 1967; Petty and Cacioppo 1979) offers a potential remedy to the problem. Involvement is roughly equivalent to task orientation, and refers to “the extent to which [an] attitudinal issue under consideration is of personal importance” to an actor (Petty and Cacioppo 1979:1915), as well as the extent to which the actor is motivated to attend to a task or interaction. Researchers have demonstrated that involvement is an important predictor of an actor’s openness to influence as well as attitude change.

Zimbardo (1960) distinguishes two separate classes of involvement—issue involvement and response involvement. Issue involvement is associated with tasks that activate personal values, beliefs, or needs. Given the ambiguity of most expectation
states tasks, it seems unlikely that an actor in the SES would experience issue involvement. Response involvement, on the other hand, is activated in situations in which an actor is concerned with task outcomes and goals (Zimbardo 1960). Clearly, task outcomes and goal objects play a central role in expectation states research, and it seems likely that task orientation may have similar effects to response involvement in the ways these two constructs organize behavior.

The vast majority of research on the relationship between involvement and social influence has been conducted by researchers within the communication-persuasion paradigm, and the preponderance of the evidence generated by this research suggests that involvement is inversely related to openness to influence (Petty, Cacioppo, and Goldman 1981). The relationship between involvement and influence has been shown, however, to be highly contingent upon the strength of the counter-attitudinal argument an actor receives, as well as the perceived expertise of the source of the influence attempt (Johnson and Eagly 1989). Because actors in the SES receive no argument from their partners at all, the communication-persuasion model may be ill suited to accounting for the effects of task orientation in this setting. Furthermore, because the communication-persuasion model specifies that source expertise moderates the effects of involvement, it still cannot account for social interactions between status equals. For these reasons, I base my predictions on Zimbardo’s (1960) cognitive dissonance model of involvement and influence.

Zimbardo asserts that attitude change and openness to influence are affected by cognitive dissonance. When an outside source attempts to influence an actor, the actor
experiences a cognitive dilemma that he or she must resolve. Individuals experiencing
cognitive dissonance have several mechanisms by which they may resolve dissonance,
such as changing their opinion in the direction of the influence source’s opinion,
attempting counter-influence, and altering the meaning of the persuasive communication
(Zimbardo 1960). Clearly, in the SES, options for resolving cognitive dissonance are
limited—that is, the persuasive communication contains no direct argument whose
meaning an actor can alter, and the potential for counter-persuasion is eliminated by the
design of the study (i.e., participants only have the opportunity to see initial choices).
According to Zimbardo’s findings, increased task or response involvement leads to
increased influence. That is, as an actor’s level of involvement increases, in the absence
of alternative means to resolve the cognitive dissonance associated with holding a
discrepant opinion, he or she is more likely to accept the influence of the outside source
(Zimbardo 1960). Zimbardo’s finding is instructive for my analysis of expectation states
theory because it suggests that involvement affects openness to influence independent of
the effects of status or argument strength.

Taken together, it appears that both collective orientation and task orientation
suppress an actor’s baseline propensity to reject influence:

Hypothesis 2: Compared to studies that make no scope-based exclusions,
studies that exclude participants for failure to demonstrate task orientation
or collective orientation will exhibit a lower baseline propensity to reject
influence, as evidenced in lower values for $m$
CHAPTER III

DATA AND METHODS

Following Kalkhoff and Thye (2006), I employ Hierarchical Linear Modeling (HLM) to test my hypotheses through meta-analysis. HLM is a statistical method useful for examining data in which individuals are nested within larger groups, such as students nested within classrooms (Sullivan, Dukes, and Losina 1999; Raudenbusch and Bryk 2002). Raudenbusch and Bryk (2002) discuss at length the advantages of using HLM to conduct meta-analysis. I estimate a two-level model in which individual studies are nested within categories based on practices regarding the exclusion of participants for violating scope conditions.

HLM Models

The purpose of utilizing HLM to examine meta-analytical data is to separate the unexplained variance in effects across studies into two components. The first component is level-one error, which is variance related to sampling error within individual studies. Level-one is estimated using the equation\(^5\):

\[ d_j = \delta_j + e_j \]  

---

\(^5\) Technically, \(d\) refers to the standardized effect size of a study. Because all studies in my analysis employ the same measure of influence, there was no need to standardize the effect. I employ the symbol \(d\) simply as a convention for describing the equations.
where \( d_j \) is the observed effect in study \( j \), \( \delta_j \) is the true effect, and \( e_j \) is sampling error. In other words, \( d_j \) is an estimate of \( \delta_j \), plus sampling error.

The second component is level-two error, which is the variance in true effect that is not accounted for by the theoretical model. Level-two error is a measure of between-study differences. The equation for level two is:

\[
\delta_j = \gamma_0 + \gamma_1 W_{1j} + \gamma_2 W_{2j} + \cdots + \gamma_s W_{sj} + u_j
\]

(7)

where \( \gamma_0 - \gamma_s \) are regression coefficients, \( W_{1j} - W_{sj} \) are values for variables predicting effects \( \delta_j \), and \( u_j \) is level-two error. The combined multi-level model then is:

\[
d_j = \gamma_0 + \gamma_1 W_{1j} + \gamma_2 W_{2j} + \cdots + \gamma_s W_{sj} + u_j + e_j
\]

(8)

Data

Webster (2003) compiled and organized a comprehensive database of status characteristics research conducted between the years 1967 and 2003. A subsequent report (Webster 2006) details status characteristics research from 2000 to 2006. From these resources, I compiled a list of studies to include in my analysis based on the following six criteria: the study reports 1) the proportion of stay responses \( P(S) \); 2) the standard deviation or variance for \( P(S) \); 3) the computed expectation advantage (or provides necessary information to compute expectation advantage); 4) the number of participants per condition; 5) the total number of participants excluded from analysis; and 6) reason(s) for any participant exclusions. The databases yielded an initial list of 60 studies in which \( P(S) \) was reported as a dependent measure. Of the 60 potential studies, I excluded 28 for failure to meet one or more of the above criteria. In addition, I excluded
studies that deviated substantially from the SES and those that employed experimental manipulations not amenable to graph-theoretic modeling, yielding an analytic sample of 32 studies. Appendix B contains a list of studies that I was unable to include in my analysis, as well as the primary reason for each study’s exclusion.

**Variables**

To calculate $m$ and $q$ values for each study, I utilize $P(S)$, variance in $P(S)$, number of study conditions, number of research participants in each study condition, and expectation advantage for each condition. To compute expectation advantage, I employed the Balkwell online expectation standing calculator (described above). I derived $P(S)$, variance in $P(S)$, number of conditions and number of participants directly from published research and from the Webster (2003) database. For many cases in which the variance for $P(S)$ was not reported, I was able to calculate it using the equation provided by Fox and Moore (1979):

$$s^2_i = \frac{s_{i}^2}{T^2}$$  \hspace{1cm} (9)

where $s_{i}^2$ is the variance in the number of stay responses in condition $i$, and $T$ is the number of critical experimental trials.

*Level one variables.* My primary variables of interest are the $q$ parameter, which identifies the strength of the relationship between status and influence, and the $m$ parameter which, as stated earlier, represents the tendency among status-equals to reject influence. $M$ and $q$ are empirical constants, and are estimated from data separately for
each study. Fox and Moore (1979) provide equations for deriving values for \( m \) and \( q \).

The equation for deriving the value of the \( q \) constant is:

\[
\hat{q} = \frac{\sum_i n_i (e_i - \bar{e})(p_i - \bar{p})}{\sum_i n_i (e_i - \bar{e})^2}
\]

(10)

where \( n_i \) is the number of participants in condition \( i \), \( e_i \) is the expectation advantage associated with condition \( i \), \( \bar{e} \) is the average expectation advantage across all conditions within a study, \( p_i \) is the average P(S) for all participants in condition \( i \), and \( \bar{p} \) is the average P(S) across all study conditions. Likewise, the value of the \( m \) parameter is obtained using the equation:

\[
\hat{m} = \bar{p} - \hat{q}\bar{e}
\]

(11)

In addition to the values of the empirical constants, meta-analysis requires the variance associated with each level one parameter. Kalkhoff and Thye (2006) provide equations for deriving the required variances. The equation for calculating the variance in \( m \) is:

\[
MSE \left[ \frac{1}{N} \left( \frac{\bar{e}^2}{\sum n_i (e_i - \bar{e})^2} \right) \right]
\]

(12)

where \( MSE \) is the “within sums of squares divided by the error degrees of freedom, [and] \( N \) is the total number of participants in the experiment” (Kalkhoff and Thye 2006:235). Variance in \( q \) is calculated as:

\[
\frac{MSE}{\sum n_i [(e_i - \bar{e})^2]}
\]

(13)
I calculated values for equations (10) through (13) above using an online tool available at (http://www.sociology.uiowa.edu/bearnhar/will/index2.asp).

**Level two variables.** In order to test the effects of scope-based exclusions on obtained values of $m$ and $q$, I created a dichotomous variable representing studies that report exclusions for failure to demonstrate task orientation and/or collective orientation (1=yes). Ideally, I would have employed a continuous measure for the number of task- or collective orientation-based exclusions made in each study, but limitations in the available data precluded such a measure. Specifically, the majority of published studies report exclusions as an aggregate number of participants excluded for a variety of reasons. Limiting my sample to studies that report the exact number of participants excluded for violation of task or collective orientation would have rendered any meaningful analysis impossible. Similarly, I would have preferred to include separate dummy variables for task orientation and collective orientation. For the same reasons listed above, I was unable to disaggregate the two types of scope-based exclusions, and therefore utilized a single measure to capture the effects of both.6

Several of the studies included in my analysis reported analytic samples in which no participants were excluded at all. To control for the possibility that any observed differences were related to the general practice of excluding participants and not specifically to scope-based exclusions, I include in my model the total proportion of participants excluded, which is simply the number of participants excluded from analysis.

---

6 I contacted several authors in an attempt to obtain information about the specific number of scope-based exclusions made in their studies. Several of them provided me with information regarding excluded participants, though the majority was unable to give me exact numbers because the data were inaccessible to them.
divided by the total number of participants who took part in the study. Lastly, I include sample size as an additional level two predictor, based on the logic that larger samples should provide better estimates of $m$ and $q$ (Kalkhoff and Thye 2006). Due to the exclusion of study conditions with no salient status or performance characteristics (see Balkwell 1991), some of the sample sizes I report differ from those reported in the literature. Table 1 presents the list of studies included in my analysis, including values for all variables, as well as means and standard deviations.
<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Exclusions (1=yes)</th>
<th>Proportion Excluded</th>
<th>m</th>
<th>q</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Moore (1968)</td>
<td>85</td>
<td>1</td>
<td>.1500</td>
<td>.6530</td>
<td>.0557</td>
</tr>
<tr>
<td>2. Berger &amp; Conner (1969)</td>
<td>120</td>
<td>0</td>
<td>.2590</td>
<td>.6385</td>
<td>.0953</td>
</tr>
<tr>
<td>3. Berger &amp; Fisek (1970)</td>
<td>76</td>
<td>0</td>
<td>.1650</td>
<td>.6781</td>
<td>.0902</td>
</tr>
<tr>
<td>4. Berger et al 1972</td>
<td>180</td>
<td>0</td>
<td>.0000</td>
<td>.7894</td>
<td>.0602</td>
</tr>
<tr>
<td>5. Freese &amp; Cohen (1973)</td>
<td>120</td>
<td>0</td>
<td>.1750</td>
<td>.6467</td>
<td>.1186</td>
</tr>
<tr>
<td>8. Freese (1976)</td>
<td>88</td>
<td>0</td>
<td>.1200</td>
<td>.6675</td>
<td>.0714</td>
</tr>
<tr>
<td>9. Parcel &amp; Cook (1977)</td>
<td>98</td>
<td>1</td>
<td>.1480</td>
<td>.6593</td>
<td>.0904</td>
</tr>
<tr>
<td>10. Webster &amp; Driskell (1978)</td>
<td>63</td>
<td>0</td>
<td>.1250</td>
<td>.6212</td>
<td>.1533</td>
</tr>
<tr>
<td>11. Harrod (1980)</td>
<td>34</td>
<td>0</td>
<td>.5000</td>
<td>.6150</td>
<td>.1427</td>
</tr>
<tr>
<td>12. Zelditch, Lauderdale, &amp; StUBLarec (1980)</td>
<td>124</td>
<td>0</td>
<td>.1140</td>
<td>.5958</td>
<td>.1432</td>
</tr>
<tr>
<td>13. Hembroff, Martin, &amp; Sell (1981)</td>
<td>125</td>
<td>0</td>
<td>.0000</td>
<td>.6238</td>
<td>.1218</td>
</tr>
<tr>
<td>16. Riordan (1983)</td>
<td>56</td>
<td>0</td>
<td>.1250</td>
<td>.6735</td>
<td>.0758</td>
</tr>
<tr>
<td>18. Foschi, Warriner, &amp; Hart (1985)</td>
<td>81</td>
<td>1</td>
<td>.1500</td>
<td>.5335</td>
<td>.0627</td>
</tr>
<tr>
<td>19. Martin &amp; Sell (1985)</td>
<td>71</td>
<td>0</td>
<td>.0760</td>
<td>.7086</td>
<td>.1025</td>
</tr>
<tr>
<td>21. Stewart (1988)</td>
<td>161</td>
<td>0</td>
<td>.1240</td>
<td>.6794</td>
<td>.0753</td>
</tr>
<tr>
<td>23. Stewart &amp; Moore (1992)</td>
<td>57</td>
<td>0</td>
<td>.1550</td>
<td>.6661</td>
<td>.1339</td>
</tr>
<tr>
<td>25. Driskell &amp; Webster (1997)</td>
<td>114</td>
<td>0</td>
<td>.0000</td>
<td>.6291</td>
<td>.1520</td>
</tr>
<tr>
<td>26. Foddy &amp; Smithson (1999)</td>
<td>212</td>
<td>0</td>
<td>.0124</td>
<td>.5076</td>
<td>.1111</td>
</tr>
<tr>
<td>27. Foschi, Enns, &amp; Lapointe (2001)</td>
<td>92</td>
<td>1</td>
<td>.1090</td>
<td>.5001</td>
<td>.0760</td>
</tr>
<tr>
<td>28. Troyer (2001)</td>
<td>90</td>
<td>0</td>
<td>.0000</td>
<td>.5683</td>
<td>.1600</td>
</tr>
<tr>
<td>29. Foschi &amp; Lapointe (2002)</td>
<td>43</td>
<td>1</td>
<td>.1250</td>
<td>.5410</td>
<td>-</td>
</tr>
<tr>
<td>31. Hopcroft (2006)</td>
<td>65</td>
<td>1</td>
<td>.1520</td>
<td>.6240</td>
<td>.0718</td>
</tr>
<tr>
<td>32. Kalkhoff, Younts, &amp; Troyer (2008)</td>
<td>80</td>
<td>1</td>
<td>.1440</td>
<td>.5718</td>
<td>.2173</td>
</tr>
</tbody>
</table>

Mean/ proportion: .4375, .1453, .6226, .1113
(s.d.): (.5040), (.0956), (.063), (.050)

* Excludes no salient status/ peer interaction condition(s)
CHAPTER IV

RESULTS

As can be seen in table 1, approximately 44 percent of the studies included in my sample excluded at least one participant for failure to meet one of the theoretical scope conditions. Regarding the overall proportion of participants excluded, values range from .0000 to .5000, with the average study excluding almost 15 percent of all participants ($\bar{x} = .1453$). Values for $m$ range from .5001 to .7894, with a mean of .6226, which can be seen as the baseline propensity to reject influence across all included studies, and as a good estimate of the larger population baseline. Finally, values for $q$ range from -.0052 to .2201, with a mean of .1113. Again, the mean $q$ value of .1113 can be considered a good estimate of the strength of the relationship between expectation advantage and influence for the population.\(^7\)

**HLM Results for $q$**

The left-hand side of table 2 presents results from the multi-level regression models for the empirical constant $q$. Model 1 includes only the level one variable $q$ and no level two predictors. Model 1 is referred to as the unconditional model, in which

\(^7\) The mean values I obtained for the empirical constants do not differ substantially from those obtained by Kalkhoff and Thye (2006) who report a mean of .6284 for $m$ and .1019 for $q$. 

26
observed effects are seen as varying around the grand mean ($\gamma_0$), plus level-two error (Raudenbusch and Bryk 2002). Results from model 1 indicate the existence of non-random variance in values for $q$. Specifically, the significant value for the variance in the true effect parameter ($\tau = .0010$, $p < .001$) suggests that a significant portion of the residual variance in $q$ cannot be attributed to chance—that is, some of the variance is attributable to systematic level two differences. The remaining two models attempt to account for these systematic differences.

In model 2, I enter my focal independent variable, which is the dummy variable for studies in which participants were excluded for violating scope conditions. Recall that hypothesis one states that values for $q$ will be significantly higher for studies that make scope-based exclusions. Table 2 shows that the regression coefficient for the scope condition variable is not significant ($\gamma_1 = -.0132$, $p = .384$). Furthermore, model 2 does little to account for the non-random variance in $q$ ($\tau = .0010$, $p < .001$). When additional controls for sample size and the total proportion of participants excluded are entered in model 3, the relationship between scope condition-based exclusions and $q$ remains non-significant. Based on model 3, I fail to reject the null hypothesis of no difference in values for $q$ between studies that make scope-based exclusions and those that do not.

**HLM Results for m**

Results from the multi-level models predicting the $m$ constant are presented on the right-hand side of table two. Again, model 4 contains no level two predictors, and the variance in true effect size indicates the presence of non-random variation in $m$
(τ = .0038, p < .001). Model 5 includes the level two measure of scope condition exclusions. Hypothesis two states that studies in which participants were excluded for scope condition violations will demonstrate significantly lower values for m. Not controlling for any other sources of variation in m, the scope condition variable is significant (γ1 = -0.0477, p = 0.032), and the effect is in the expected direction. When controlling for the total proportion of participants excluded and sample size in model 6, the effect of the scope condition variable remains significant (γ1 = -0.0460, p = 0.047).

Based on model 6, hypothesis 2 is supported. Excluding participants from analysis for violating scope conditions significantly lowers the observed baseline tendency to reject influence.
Table 2. Effects of Scope Exclusions on $q$ and $m$

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Effect</td>
<td>Intercept</td>
<td>0.1070***</td>
<td>0.1125***</td>
<td>0.1178***</td>
<td>0.6217***</td>
<td>0.6423***</td>
</tr>
<tr>
<td></td>
<td>(0.0074)</td>
<td>(0.0097)</td>
<td>(0.0226)</td>
<td>(0.0112)</td>
<td>(0.0140)</td>
<td>(0.0306)</td>
</tr>
<tr>
<td>Scope Exclusions</td>
<td>0.0132</td>
<td>0.0127</td>
<td>0.0477*</td>
<td>0.0460*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0149)</td>
<td>(0.0159)</td>
<td>(0.0212)</td>
<td>(0.0222)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Excluded</td>
<td>0.0349</td>
<td>0.0597</td>
<td></td>
<td>0.0960</td>
<td>(0.1201)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Sample Size</td>
<td>0.0001</td>
<td>0.0000</td>
<td>(0.0001)</td>
<td>(0.0002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Random Effect</td>
<td>τ</td>
<td>0.0010</td>
<td>0.0010</td>
<td>0.0011</td>
<td>0.0038</td>
<td>0.0033</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.000)</td>
<td>(2.000)</td>
<td>(2.000)</td>
<td>(2.000)</td>
<td>(2.000)</td>
</tr>
<tr>
<td></td>
<td>χ^2</td>
<td>695.9476***</td>
<td>694.4858***</td>
<td>695.9476***</td>
<td>790.2369***</td>
<td>694.4858***</td>
</tr>
<tr>
<td></td>
<td>df</td>
<td>31</td>
<td>30</td>
<td>28</td>
<td>31</td>
<td>30</td>
</tr>
</tbody>
</table>

Numbers in parentheses are standard errors.

100% > $p_{***} > p_{*}$

Effects on $q$

Effects on $m$

等特点：

- Table 2: Effects of Scope Exclusions on $q$ and $m$.
CHAPTER V

DISCUSSION

Multilevel regression results indicate that excluding participants from analysis for violating scope conditions significantly reduces the baseline propensity to reject influence \(m\), while scope condition-based exclusions do not significantly impact the magnitude of the relationship between expectation advantage and P(S) values \(q\). I begin this section with a discussion of some specific contributions of the present study to the understanding of how scope conditions affect research outcomes. Second, I discuss the importance of developing a more standard approach to measuring scope conditions in the SES. Third, I present possible explanations for the lack of significant findings in my multi-level regression models related to the empirical constant \(q\). I conclude this section with a discussion of methodological limitations in the present study.

Implications for Expectation States Research

Although many expectation states researchers advocate excluding participants who violate scope conditions, no prior research of which I am aware has directly explored how this practice impacts the observed relationship between status and influence. Accordingly, the most direct contribution of the present research is demonstrating that studies that exclude from analysis individuals who are not task
oriented or collectively oriented exhibit a reduced baseline tendency to reject influence. This finding is not in and of itself problematic for expectations states research. What is potentially problematic, however, is the implication that differences in the ways that researchers operationalize and implement scope conditions may affect the comparability of studies conducted in the expectation states paradigm. Given that one of the primary strengths of expectation states research is its capacity to generate cumulative knowledge, any practice that compromises the comparability of studies also compromises the capacity for such cumulative research.

It is interesting to note that only a few scope condition violations may be necessary to alter experimental outcomes. For example, Wagner, Ford, and Ford (1986) exclude only five participants out of 152 (3.3 percent) for scope violations. Similarly, Foschi, Warriner, and Hart (1985) exclude five participants out of 120 (4.2 percent) for scope violations. Other studies that report the specific number of participants excluded for scope violations follow the same pattern. Seemingly small numbers of scope violations do not necessarily translate into negligible effects, which is all the more reason for researchers to reach a consensus about how we assess scope conditions, as well as what to do about individuals who fail to meet our scope criteria.

*Standardizing the assessment of scope conditions.* Foschi (2008) discusses the many different ways in which researchers operationalize collective orientation. Although there are currently no standard measures for scope conditions, the present research clearly indicates that excluding participants based on *any* measure of task or collective orientation alters the observed relationship between status characteristics and openness to
influence. Based on my findings, I contend that researchers cannot assume that different practices regarding the exclusion of participants have no bearing on experimental outcomes.

The lack of standardization regarding scope conditions is somewhat perplexing given both the importance of scope conditions to expectation states theory and the highly standardized nature of almost every other facet of expectation states research. Berger and colleagues (1977:27) state, “Scope assertions are as much a part of ‘the theory proper’ as are its basic assumptions about the phenomena within its scope.” Stated differently, scope conditions are key components of expectations states theory and not simply peripheral theoretical guidelines. As such, it may be only a slight overstatement to suggest that standardizing practices regarding scope conditions is as important to generating cumulative knowledge as is employing a standard measure of influence or a standard operationalization of status advantage.

Over more than three decades of research, the SES has undergone several adjustments and improvements. For example, video technology has increased the sophistication of experimental manipulations. In addition, computer programs now allow researchers to create emulated subjects for their participants to interact with. My research, along with the research of others (chiefly Foschi 2008), indicates the need for further procedural refinement. Researchers need to begin discussing how we can arrive at valid and mutually acceptable operationalizations for scope conditions. Second, we must reach a consensus on how to handle data from participants who fail to meet scope conditions. An important first step in this discussion, I believe, is for researchers to
include in their publications specific information about how they have accounted for scope conditions, as well as detailed information regarding the criteria used in determining which participants to exclude from analysis.

**Scope Conditions and q Revisited**

Based on my review of the existing literature on scope conditions, I expected that excluding participants from analysis for violating scope conditions—along with the consequent increase in levels of task and collective orientation—would correspond to inflated values for the empirical constant $q$, though my analysis did not reveal the anticipated result. The lack of significant relationship between scope condition-based exclusions and $q$ may be due to the fact that $q$ embodies situational effects, such as the impact of the experimental manipulation or differences across research protocols. Theoretically, any variation in $q$ should be directly related to variation in the experimental environment, and not to characteristics of participants. Conversely, variation in $m$ is directly attributable to characteristics of the population under investigation. Although situational differences can affect levels of task orientation and collective orientation (Troyer 2001), not surprisingly my research suggests that these two scope conditions have no substantial bearing on the environment.

**Limitations in the Present Study**

Possibly the largest limiting factor in the present study was my inability to separate the effects of task orientation from the effects of collective orientation. As stated above, limitations in the available data prevented me from employing separate
measures for the two types of scope-based exclusions. By combining task orientation-based exclusions and collective orientation-based exclusions into a single variable I was unable to control for the possibility that one type of exclusion might have the expected effect and the other might have no effect at all. For example, if exclusions related to a lack of task orientation exerted the anticipated downward effect on \( m \), but exclusions based on collective orientation exerted no effect, I would expect to observe some portion of the relationship between task orientation and baseline levels of influence rejection, but the full effect would be obscured by the confounding of the meaningful variation in \( m \) related to task orientation with the meaningless variation related to collective orientation.

Additionally, the research presented in this paper is limited in that for methodological reasons I was unable to include in my sample almost half of all published studies on status characteristics and expectation states. In selecting studies for inclusion in my sample, I made every effort to retain the largest sample possible. I excluded only studies that: a) deviated substantially from the SES; b) employed an independent variable that is not amenable to the current graph-theoretic formulation utilized in expectation states research; or c) did not contain sufficient information required to compute the variables employed in my analysis (see Appendix B). Nonetheless, with such a small analytical sample, the possibility exists that my results may have been substantially different were I able to include a larger number of studies in my analysis.
CHAPTER VI

CONCLUSION

From its inception, expectation states theory was formulated to produce a cumulative body of social knowledge applying to an expanding variety of situations. Researchers within the expectation states tradition employ two very useful tools in pursuit of the aforementioned goals: standardized research protocols and scope conditions. Standardized protocols facilitate the comparison of results across studies so that researchers can more easily build upon existing knowledge. Scope conditions allow researchers to clearly delineate the boundaries of their investigation, as well as to enlarge the boundaries of the theory. Given that both scope conditions and standardized protocols are utilized to make cumulative social theory possible, it is somewhat ironic that a lack of standardized practices regarding scope conditions may affect the comparability of studies.

Many researchers have noted the need to develop standardized methods to assess the satisfaction of scope conditions. Admittedly, the task of reforming such a prolific research paradigm as expectation states theory appears daunting, and will no doubt be carried out over a lengthy discursive process. The benefits of developing more universally accepted practices to handle scope conditions, as well as incorporating those practices into the formal SES, however, are readily apparent: theoretical consistency and methodological uniformity.
CHAPTER VII

REFERENCES


15.


Troyer, Lisa. 2001. “Effects of Protocol Differences on the Study of Status and Social


From Equation (3):

\[
e_x^+ = [1 - (1 - f(i)) \cdots (1 - f(n))] = [1 - (1 - f(4)) (1 - f(5))] = f(4) + f(5) - f(4) \cdot f(5) =
\]

\[.1503802384 + .0497787748 - .1503802384 \cdot .0497787748 = .19267\]

From Equation (4):

\[
e_x^- = -[1 - (1 - f(i)) \cdots (1 - f(n))] = -[1 - (1 - f(0)) (1 - f(0))] = f(0) + f(0) - f(0) \cdot f(0) = 0
\]

For expectation value we get:

\[
e_x = e_x^+ + e_x^- = .19267 + 0 = .19267
\]

Note: Berger and colleagues offer empirically derived \( f \) values, while Balkwell offers \( f \) values based on a priori assumptions. I utilize Balkwell’s \( f \) values in these calculations.
APPENDIX B. STUDIES NOT INCLUDED IN META-ANALYSIS AND REASONS FOR EXCLUSION

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Camilleri &amp; Berger (1967)</td>
<td>Manipulate responsibility for team score</td>
</tr>
<tr>
<td>2. Balkwell (1969)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>3. Webster (1969)</td>
<td>Data are reported in Webster &amp; Sobieszek (1974)</td>
</tr>
<tr>
<td>4. Freese (1974)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>5. Balkwell (1976)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>6. Kervin (1977)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>7. Webster (1977)</td>
<td>Exclusions not reported</td>
</tr>
<tr>
<td>9. Driskell (1982)</td>
<td>Number of critical trials not reported—Cannot calculate variance for P(S)</td>
</tr>
<tr>
<td>10. Pugh &amp; Wahrman (1983)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>11. Tuzlac &amp; Moore (1984)</td>
<td>Does not report N for separate conditions—Cannot calculate m or q</td>
</tr>
<tr>
<td>14. Foschi &amp; Buchanan (1990)</td>
<td>No variation in expectation advantage—Cannot calculate m or q</td>
</tr>
<tr>
<td>15. Foschi &amp; Freeman (1991)</td>
<td>No variation in expectation advantage—Cannot calculate m or q</td>
</tr>
<tr>
<td>16. Berger et al. (1992)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>17. Lovaglia (1995)</td>
<td>Cannot calculate expectation advantage—manipulation not amenable to existing graph-theoretic model</td>
</tr>
<tr>
<td>20. Troyer &amp; Younts (1997)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>23. Fisek, Berger, &amp; Moore (2002)</td>
<td>Variance for P(S) not reported</td>
</tr>
<tr>
<td>27. Whitmeyer, Webster, &amp; Rashotte (2005)</td>
<td>Does not report N for separate conditions—Cannot calculate m or q</td>
</tr>
</tbody>
</table>